

Claims

1. Method for producing a multi-ply web of flexible material, at a plurality of glue sites, which comprises:

5 by gluing the plies bringing a patterned glue transfer roll, having a pattern of protuberances, in contact with a glue application device;

transferring glue to a first web shaped flexible material in a glue pattern corresponding to the configuration of the protuberances;

10 bringing a second web shaped flexible material in contact with the glue applied side of said first web shaped flexible material in a press nip between a patterned lamination roll and an impression roll; said lamination roll having a pattern of protuberances corresponding to said glue pattern; the glue transfer roll and the lamination roll being in register with each other, so that the first and second web shaped flexible materials are combined and glued together in a pattern corresponding to the configuration of the protuberances of the glue transfer roll, wherein the first
15 web shaped flexible material and/or the second web shaped flexible material is printed by a printing roll carrying a colorant in a selected pattern; and said printing is performed in register with the glue transfer while the first and/or second web shaped flexible materials are residing on said impression roll.

20 2. Method as claimed in claim 1, wherein said first web shaped flexible material is printed before it is laminated to the second web shaped flexible material, and the printed pattern is printed on the inner side of the first web shaped flexible material facing the second web shaped flexible material.

25 3. Method as claimed in claim 2, wherein two or more patterns are printed in subsequent steps on said first web shaped flexible material before it is laminated to the second web shaped flexible material, said patterns being printed in register with each other and with the glue pattern.

30 4. Method as claimed in claim 1, wherein said second web shaped flexible material is printed after or simultaneously with the lamination to the first web shaped flexible material, wherein the printed pattern is printed on the outside of the second web shaped flexible material.

35 5. Method as claimed in claim 4, wherein two or more patterns are printed in subsequent steps on said second web shaped flexible material after or simultaneously

with the lamination to the first web shaped flexible material, said patterns being printed in register with each other and with the glue pattern.

- 5 6. Method as claimed in claim 2, wherein at least two printing stations are provided; at least one first printing station prints at least one first pattern on the first web shaped flexible material before it is laminated to the second web shaped flexible material; and at least one second printing station prints at least one second pattern on the second web shaped flexible material after lamination to the first web shaped flexible material.
- 10 7. Method as claimed in claim 1, wherein the glue is a coloured glue, and a coloured glue pattern will appear as a printed pattern.
- 15 8. Method as claimed in claim 7, wherein a printing pattern is the same as and printed on the next web shaped flexible material just on top of a coloured glue pattern on the underlying web.
- 20 9. Method as claimed in claim 8, wherein said printing pattern and said glue pattern are of different colour.
- 25 10. Method as claimed in claim 6, wherein the two printing patterns are different.
11. Method as claimed in claim 7, wherein the coloured glue pattern and the printing pattern are different.
- 30 12. Method as claimed in claim 1, wherein the size of each glue site amounts to between 0.15 and 150 mm².
13. Method as claimed in claim 1, wherein the number of glue sites per unit area amounts to between 25 per m² to 150 per cm².
- 35 14. Method as claimed in claim 1, wherein the pattern configuration of the glue transfer roll is chosen so that glue is applied to said first ply in glue sites covering an area corresponding to between 0.03 and 9% of the total area of the first web shaped flexible material and sparsely distributed over substantially the entire area of the first web shaped flexible material.

15. Method as claimed in claim 1, wherein at least one of the plies before lamination with the opposite ply is exerted to a three dimensional patterning provided on the ply while wet, during drying of the wet ply and/or in dry state.

5 16. Method as claimed in claim 1, wherein the multi-ply web after lamination is embossed.

17. Method as claimed in claim 1, wherein any of said web shaped flexible materials comprises one or more plies of flexible material.

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18. Multi-ply web of flexible material, comprising at least one first and one second ply which are interconnected by a glue pattern having a plurality of discrete glue sites, wherein the web is printed with at least one printing pattern which is in register with the glue pattern.

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19. Multi-ply web as claimed in claim 18, wherein at least one printing pattern is printed on the inner side of at least one ply.

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20. Multi-ply web as claimed in claim 18, wherein at least one printing pattern is printed on the inner side of at least one ply and is visible from the outside of the multi-ply web.

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21. Multi-ply web as claimed in claim 20, wherein at least one printing pattern is printed on the inner side of at least one ply and at least one printing pattern is printed on the outer side of at least one ply.

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22. Multi-ply web as claimed in claim 8, wherein the glue in the glue sites is coloured and thus appears as a printed pattern which is visible from the outer side of the multi-ply web.

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23. Multi-ply web as claimed in claim 22, wherein the coloured glue pattern and at least one printing pattern are the same and are located just opposite each other.

24. Multi-ply web as claimed in claim 23, wherein the coloured glue pattern and the at least one printing pattern are of different colours, so that the multi-ply web will have a two-sided appearance with different colours appearing on opposite sides.

25. Multi-ply web as claimed in claim 21, wherein the two printing patterns are different.

5 26. Method as claimed in claim 22, wherein the coloured glue pattern and the printing pattern are different.

27. Multi-ply web as claimed in claim 18, wherein the first and second plies have different properties.

10 28. Multi-ply web as claimed in claim 18, wherein the glue sites take up a total area of between 0.03 and 9% of the total surface area of the respective ply.

15 29. Multi-ply web as claimed in claim 18, wherein the size of each glue site amounts to between 0.15 and 150 mm².

30. Multi-ply web as claimed in claim 18, wherein at least one of the plies has a three-dimensional pattern provided before joining with the opposite ply.

20 31. Multi-ply web as claimed in claim 18, wherein the multi-ply web is embossed.

32. Multi-ply web as claimed in claim 18, wherein at least one of the plies has holes therein.